2006-2009 State Innovation Grant Program:

Management Plan On Odor Reduction

Workplan

Project Summary
Project Title: Development of New Technologies and Best Management Practices for the Control of Odorous Emission in Concentrated Animal Feeding Operations

Location: State of Missouri

Applicant: Missouri Department of Natural Resources

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Funding will allow research institutions to develop and implement new technologies and best management practices for the control of odor emissions from concentrated animal feeding operations. Newer technologies can lead to improved air quality. By concerted integration of livestock industries with new technologies and best management practices odor emissions may be reduced.

Advancing technologies will give livestock producers cost-effective solutions for reducing odor while keeping competitive. Progress toward science-based tools for controlling odor will help manage expectations for odor control and lead to practical solutions.

It is vital that policies protect the public's health, sustain and enhance the communities in which livestock production takes place, and protect and enhance the environment and Missouri's natural resources through sound production practices, environmental controls and the development of a long-range, sustainable environmental technologies for CAFOs.

Project Narrative

This project would develop and implement of new technologies and best management practices to address the emission of odorous emissions from concentrated animal feeding operations.

Odor emissions from concentrated animal feeding operations (CAFOs) originate from three primary sources: (1) air emissions from housing units; (2) air emissions from manure storage facilities; and (3) air emissions during and following land application events. Not only are there concerns regarding ambient air quality but the impacts on human health. Odors are one of the most significant community concerns associated with CAFOs. These odors can be an extreme nuisance and can induce adverse health effects with sufficient exposure.

The scope of this project is to address these problems by developing promising control technologies that may provide a pragmatic solution to odor abatement while the minimizing the expenditures being incurred by the livestock producers. Innovative quality or management system-driven initiatives with environmental benefit will also be considered.

This project relates to EPA's Environmental Innovation Strategy in several ways. First, it goes beyond a single facility experiment to promote change that is systems-oriented. Second, the project deals with a priority environmental issue for both Missouri and EPA: controlling air emissions from CAFOs. Third, the project will develop innovative approaches to animal agriculture environmental improvements using partnerships with the Missouri Department of Natural Resources, Missouri Department of Agriculture and research-oriented college and universities.

The focus on developing new technologies would lead to applications that are easily transferable to the agriculture industry. This picture would guide MDNR in their targeting of environmental improvement resources. In addition, this first in-state experience with ERP and its tools will undoubtedly lead to adaptation in other economic sectors besides animal agriculture, such as priority sectors within manufacturing

ERP is a regulatory program that has seen use in various business sectors with numerous small facilities in several states. These sectors, such as auto body shops, photo processors, dry cleaners, printers, have typically been relatively unrelated. The Missouri Department of Natural Resources considers the adaptation is feasible and offers the numerous environmental benefits.

Threshold Elements:

GOAL: To disperse grant awards to research-based colleges and universities for the development of odor control technologies and/or the implementation of best management practices to minimize odor in livestock operations.

ACTIVITIES: The Missouri Department of Natural Resources will partner with the Missouri Department of Agriculture to develop a competitive process for the evaluation and selection of grant recipient to develop odor control technologies and implement these as a part of best management practices that are easily transferable to the livestock industry.

Announce the opportunity for researched-oriented colleges and universities to compete for funds to evaluate previously developed technologies develop new scientific and engineering technologies, and best management practices that are economically feasible for implementation by CAFOs.

Cooperative contract and agreement signed between the Missouri Department of Natural Resources, the Missouri Department of Agriculture and the educational institutions selected.

Program Criteria Requirements

The proposed project will demonstrates innovation developed by research based educational institutions and supported by MDNR. It applies to a sector in which it has not yet been deployed. The state research institutions will research developing technologies as they apply to agricultural odor control capability. This information will be easily disseminated to industry, the public and governmental agencies via web and reports.

The focus of the project proposal is on techniques for preventing air emissions from livestock operations. Universities may develop EMS-like approaches (including auditing) already being used by producers or promoted by agricultural associations to accomplish the reduction of odors.

Target Priority Environmental Issues

Measures will show the effectiveness of the new technology and best management practices as well as how this information or guidance will help producers to improve environmental concerns sooner than the existing alternatives, and encouraged improvement beyond compliance.

Likely Improvement in Results from Project Implementation

DNR expects that participating research institutions will encourage self-auditing through environmental management systems. Quantifiable environmental improvements by self-corrections for odor compliance, feed and supplement BMPs, and comprehensive nutrient management plans. The grant recipients will develop these measures further.

Measuring Improvement and Accountability

Adoption of Best Management Practices

The ability of livestock producers to develop and implement best management practices. Stopping odors using best management practices preferably by developing an

Environmental Management System. Through the management of odor producing activities the producers can eliminate some problems.

Some best management practices can help eliminate fiscal waste from an operation and will in the long term benefit the operation and cost less money. Better utilization of waste as a resource.

Chemical Treatment and Engineering Advancement
Current operations were designed to use simple but odor causing technology. If technology is developed so the facilities are designed to handle odor and emission concerns cost in retrofitting facilities is reduced. Some technologies have been developed for large operations, but they are costly. More needs to be done to help smaller operations deal with waste in an economical, yet odor/emission free way.

Developing a waste as resource/product outlook, by the industry and the public. If the public can see that the odor/emission causing material is the raw material for new products and the economic impetus of the potential business development in an area, the public can get behind the idea. If industry can see real progress in chemical treatment and engineering advancements they will be more likely to invest in such ideas.

Nutrition and Dietary Improvements
If livestock can be fed so efficiently that biological wastes are reduced then the source of emissions/odor is also reduced. If less waste is produced because of diet manipulation, there is less chance for air emission problems.

Goals for environmental improvement
Indicators of environmental improvement – a decrease in measurable odor emissions from livestock operations in Missouri by 80%. Most notably by those implementing the new technologies of environmental systems develop by the research institutions.

Transferring Innovation
All assimilate data and results gathered as a result of the project will be made available to the public, industry, and government agencies via the web and through written reports. MDNR believes other farm states with numerous animal agriculture operations will find this project useful.